Comparison of suppressiveness of soil to *Heterodera schachtii* after different management inputs at different depths

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The cyst nematode *Heterodera schachtii* Schmidt is one of the most dangerous sugar beet pests; it causes serious stand and yield losses in many sugar beet production areas. The adoption of wide crop rotation and the cultivation of resistant cruciferous plants as cover crops and production of tolerant sugar beet cultivars help to maintain economic yields in infested soils. This poster reports *H. schachtii* field population levels under a cruciferous crop rotation and fallow period at two depths (0-30 cm and 30-60 cm) before tolerant sugar beet cultivation. Soil suppression levels to *H. schachtii* were expected to differ in the two soil depths as indicated by an earlier study in California (Roberts et al.). The objectives of our study were to identify major factors (cruciferous crop rotation, fallow crop rotation, soil depth, organic substrates) influencing population levels of *H. schachtii* in support of rational management decisions**.** Population densities of *H. schachtii* were determined, followed by a bioassay to quantify the number of juveniles (J2) that enter the roots. In this bioassay, equivalents of 50 g soil dry weight were adjusted to 10-20% moisture, seeded with *Raphanus sativus* cv. Saxa 3, and incubated at a day-night (16:8 h) cycle of 28/23 °C. After 4 days of incubation, J2 in radish roots were enumerated. In parallel treatments, loess soil samples received the equivalent cyst numbers or the equivalent cyst numbers plus organic matter as amendment. Cysts were extracted by density centrifugation using magnesium sulfate solution, were broken to enumerate eggs. Ratios of J2 to eggs were compared by non-parametric statistics to evaluate the effect of soil depth and organic soil material.

No significant difference in the number of J2 penetrating radish roots in the bioassay were observed between fallow period treatment and fodder radish treatment, or between cysts from 0-30 cm and 30-60 cm soil depth.

In the fallow period treatment, the organic substrates showed a significant effect on the number of penetrated J2 in radish root with cysts from 0-30 cm depth. But in the fodder radish treatment the organic substrates did not show this effect. A significant difference in the ratios of J2 / eggs was apparent between field soil treatments of fallow period and fodder radish at 0-30 cm depth. As the soil moisture in the bioassay was 11% for all samples and also other assay conditions were standardized, the reason of the observed effects may not be related to the soil potential water but rather to differences in microbial communities. Possibly, microbial colonization of the organic matter played a critical role.